CLOSED
CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

STATISTICAL EVALUATION OF SEPTEMBER 2002 AND DECEMBER 2002 GROUNDWATER QUALITY DATA

MARCH 2003

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 4

RECEIVED 5/12/2003

CLOSED
CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

RESULTS OF DECEMBER 2002
GROUNDWATER SAMPLING

FEBRUARY 2003

IS LOCATED IN THE GROUNDWATER
MONITORING REPORTS ARCHIVE,
BOX NUMBER 4

RECEIVED 2/27/2003

Hydrometrics, Inc.®
consulting scientists, engineers, and contractors

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Lewis & Clark Co
City of Helena #90
grd wtr mon (corresp)

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NOV 27 2002
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

November 25, 2002

Ms. Pat Potts
Montana Department of Environmental Quality
Permitting and Compliance Division
WMD / SWP
P.O. Box 200901
Helena, MT 59620

Dear Pat,

Enclosed for your review are the proposed monitoring sites and analytical schedule for the December 2002 semiannual groundwater monitoring at the Helena Landfill. The only changes from the June 2002 sampling regime is the replacement of well 18 with well 19 in the same area as the homeowner of well 18 no longer uses that well and changing the DI blank to a trip blank. Please call if you have any questions or comments.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

c: John Rundquist, City of Helena
Mike Wignot, Hydrometrics

HELENA LANDFILL
DECEMBER 2002 SAMPLE SITE AND PARAMETER LIST

Site Name	Parameter
Monitoring Wells [1]	
83-6	Table 1
HL-94-1	Table 1
I-1	Table 1 VOC's only
HL-94-2	Table 1
HL-90-3	Table 1
HL-90-3 (duplicate)	Table 1
INF. GALLERY	Table 1 VOC's only
HL-94-3	Table 1
MPC-2	Table 1 VOC's only
HL-90-2	Table 1
HL-99-3	Table 1
EPA-1	Table 1
HL-99-2	Table 1
MPC-1	Table 1
MPC-5	Table 1
HL-99-1	Table 1
I-4	Table 1 VOC's only
HL-90-1	Table 1
Residential Wells:	
5	Table 1 VOC's only
19	Table 1 VOC's only
40	Table 1 VOC's only
48	Table 1 VOC's only
52	Table 1 VOC's only
57	Table 1 VOC's only
62	Table 1 VOC's only
90	Table 1 VOC's only
Quality Control:	
Trip Blank	Table 1
Rinsate Blank	Table 1

(1) Monitoring wells are listed in the order to be sampled.

CLOSED
CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

RESULTS OF SEPTEMBER 2002
GROUNDWATER SAMPLING

NOVEMBER 2002

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CLOSED
CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

STATISTICAL EVALUATION OF MARCH AND JUNE 2002 GROUNDWATER QUALITY DATA

SEPTEMBER 2002

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 4

RECEIVED 10/7/2002

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Lewis + Clark Co
City of Helena #90
Grd wtr mon (~~COMP~~ ANALY)

October 1, 2002

RECEIVED
OCT 07 2002
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

Ms. Pat Potts
Environmental Specialist
Department of Environmental Quality
Permitting and Compliance Division
Community Services Bureau
WMS/SWP
P.O. Box 200901
Helena, MT 59620

RE: LEWIS & CLARK COUNTY, CITY OF HELENA CLASS II (INACTIVE) LANDFILL – LICENSE NO. 90
GROUND WATER MONITORING – RESAMPLE OF WELL 52 FOR JUNE 2002 SAMPLING EVENT.

Dear Ms. Potts:

This letter is in regards to your letter to John Rundquist of the City of Helena dated August 26, 2002 detailing your concerns about the June 2002 sampling event and specifically your request that we resample well 52. As you are aware, the concentration of methylene chloride detected in well 52 for the June 2002 sampling event was 5.8 ppb and exceeded the maximum contaminate level of 5 ppb. As we mentioned in our response to your comments, Energy Labs indicated that they have had a problem with methylene chloride contamination in bottles distributed from their Helena office. They assured us that they problem had been fixed and agreed to resubmit the laboratory analytical report for that sample with a note indicating possible contamination in the sample vial. A copy of that report is attached to this letter.

We also agreed to resample that well as soon as possible. Well 52 was re-sampled on September 4, 2002 along with the quarterly groundwater sampling for that project. In conjunction with your comments, we had the lab prepare a trip blank that was carried with the remaining sample bottles throughout the sampling process. The lab reports, sampling forms and field notes are also attached to this letter. You will note that although the methylene chloride concentration in the well 52 sample is below the reporting limit, the trip blank for this sampling event has a methylene chloride concentration of 5.2 mg/L. Since the lab prepared the blank, they are reissuing the laboratory analytical reports to reflect that this contamination is the fault of the lab. The lab also stated that they would initiate corrective action to correct the problem and meanwhile, Hydrometrics will order all future VOC vials from the Billings lab which has not had this problem.

The results of the well 52 re-sample indicate methylene chloride is present well below the MCL; therefore, no letter will be sent to the homeowner indicating an exceedance.

If you have any questions or comments concerning this information, please don't hesitate to call.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

Attachments

c: John Rundquist, City of Helena
Mike Wignot, Hydrometrics

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 2704 Billings Avenue • [redacted]na, MT 59604
877-472-0711 • 406-442-0711 • 406-442-0712 fax • debg@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena Landfill
Lab ID: H02060039-006
Client Sample ID: HL-0206-106

#52

Report Date: 09/09/02
Collection Date: 06/05/02 17:00
Date Received: 06/10/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	06/18/02 21:35 / sbd
Acrylonitrile	ND	ug/L		20		SW8260B	06/18/02 21:35 / sbd
Benzene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Bromochloromethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Bromodichloromethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Bromoform	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Bromomethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Carbon disulfide	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Carbon tetrachloride	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Chlorobenzene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Chlorodibromomethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Chloroethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Chloroform	5.5	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Chloromethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,2-Dibromoethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Dibromomethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,2-Dichlorobenzene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,4-Dichlorobenzene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
trans-1,4-Dichloro-2-butene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Dichlorodifluoromethane	0.94	ug/L	J	1.0		SW8260B	06/18/02 21:35 / sbd
1,1-Dichloroethane	0.46	ug/L	J	1.0		SW8260B	06/18/02 21:35 / sbd
1,2-Dichloroethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,1-Dichloroethene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
cis-1,2-Dichloroethene	0.36	ug/L	J	1.0		SW8260B	06/18/02 21:35 / sbd
trans-1,2-Dichloroethene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,2-Dichloropropane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
cis-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
trans-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Ethylbenzene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
2-Hexanone	ND	ug/L		20		SW8260B	06/18/02 21:35 / sbd
Iodomethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Methyl ethyl ketone	ND	ug/L		20		SW8260B	06/18/02 21:35 / sbd
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	06/18/02 21:35 / sbd
Methylene chloride	5.8	ug/L	1	1.0		SW8260B	06/18/02 21:35 / sbd
Styrene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,1,1,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,1,2,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
J - Estimated value. The analyte was present but less than the reporting limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • debg@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena Landfill
Lab ID: H02060039-006
Client Sample ID: HL-0206-106

Report Date: 09/09/02
Collection Date: 06/05/02 17:00
Date Received: 06/10/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Tetrachloroethene	1.8	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Toluene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
1,1,1-Trichloroethane	0.32	ug/L	J	1.0		SW8260B	06/18/02 21:35 / sbd
1,1,2-Trichloroethane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Trichloroethene	0.32	ug/L	J	1.0		SW8260B	06/18/02 21:35 / sbd
Trichlorofluoromethane	0.38	ug/L	J	1.0		SW8260B	06/18/02 21:35 / sbd
1,2,3-Trichloropropane	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Vinyl acetate	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Vinyl chloride	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
m+p-Xylenes	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
o-Xylene	ND	ug/L		1.0		SW8260B	06/18/02 21:35 / sbd
Surr: 1,2-Dichloroethane-d4	104	%REC			72-116	SW8260B	06/18/02 21:35 / sbd
Surr: Dibromofluoromethane	107	%REC			74-121	SW8260B	06/18/02 21:35 / sbd
Surr: p-Bromofluorobenzene	100	%REC			87-124	SW8260B	06/18/02 21:35 / sbd
Surr: Toluene-d8	102	%REC			85-115	SW8260B	06/18/02 21:35 / sbd

(1) Methylene Chloride presence in sample may be due to the use of contaminated VOA vials used for sampling. Methylene chloride contamination in sampling vials has been seen previously, but, contamination is not indicated within other samples of this sample delivery group.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
J - Estimated value. The analyte was present but less than the reporting limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena GW
Lab ID: H02090019-001
Client Sample ID: HL-0209-100 Trip Blank

Report Date: 09/16/02
Collection Date: 09/04/02 09:00
Date Received: 09/04/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	16	ug/L	J	20		SW8260B	09/09/02 15:24 / trr
Acrylonitrile	ND	ug/L		20		SW8260B	09/09/02 15:24 / trr
Benzene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Bromochloromethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Bromodichloromethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Bromoform	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Bromomethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Carbon disulfide	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Carbon tetrachloride	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Chlorobenzene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Chlorodibromomethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Chloroethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Chloroform	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Chloromethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,2-Dibromoethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Dibromomethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,2-Dichlorobenzene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,4-Dichlorobenzene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
trans-1,4-Dichloro-2-butene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,1-Dichloroethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,2-Dichloroethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,1-Dichloroethene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
cis-1,2-Dichloroethene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
trans-1,2-Dichloroethene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,2-Dichloropropane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
cis-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
trans-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Ethylbenzene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
2-Hexanone	ND	ug/L		20		SW8260B	09/09/02 15:24 / trr
Iodomethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Methyl ethyl ketone	ND	ug/L		20		SW8260B	09/09/02 15:24 / trr
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	09/09/02 15:24 / trr
Methylene chloride	5.2	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Styrene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,1,1,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,1,2,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr

Report Definitions:
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LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena GW
Lab ID: H02090019-001
Client Sample ID: HL-0209-100 Trip Blank

Report Date: 09/16/02
Collection Date: 09/04/02 09:00
Date Received: 09/04/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Tetrachloroethene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Toluene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,1,1-Trichloroethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,1,2-Trichloroethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Trichloroethene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Trichlorofluoromethane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
1,2,3-Trichloropropane	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Vinyl acetate	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Vinyl chloride	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
m+p-Xylenes	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
o-Xylene	ND	ug/L		1.0		SW8260B	09/09/02 15:24 / trr
Surr: 1,2-Dichloroethane-d4	96.0	%REC			70-130	SW8260B	09/09/02 15:24 / trr
Surr: Dibromofluoromethane	95.2	%REC			77-126	SW8260B	09/09/02 15:24 / trr
Surr: p-Bromofluorobenzene	102	%REC			76-127	SW8260B	09/09/02 15:24 / trr
Surr: Toluene-d8	106	%REC			79-122	SW8260B	09/09/02 15:24 / trr

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena GW
Lab ID: H02090019-004
Client Sample ID: HL-0209-103

#52

Report Date: 09/16/02
Collection Date: 09/04/02 11:00
Date Received: 09/04/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Acetone	ND	ug/L		20		SW8260B	09/10/02 14:19 / trr
Acrylonitrile	ND	ug/L		20		SW8260B	09/10/02 14:19 / trr
Benzene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Bromochloromethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Bromodichloromethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Bromoform	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Bromomethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Carbon disulfide	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Carbon tetrachloride	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Chlorobenzene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Chlorodibromomethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Chloroethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Chloroform	5.3	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Chloromethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,2-Dibromo-3-chloropropane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,2-Dibromoethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Dibromomethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,2-Dichlorobenzene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,4-Dichlorobenzene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
trans-1,4-Dichloro-2-butene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Dichlorodifluoromethane	1.1	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,1-Dichloroethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,2-Dichloroethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,1-Dichloroethene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
cis-1,2-Dichloroethene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
trans-1,2-Dichloroethene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,2-Dichloropropane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
cis-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
trans-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Ethylbenzene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
2-Hexanone	ND	ug/L		20		SW8260B	09/10/02 14:19 / trr
Iodomethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Methyl ethyl ketone	ND	ug/L		20		SW8260B	09/10/02 14:19 / trr
Methyl isobutyl ketone	ND	ug/L		20		SW8260B	09/10/02 14:19 / trr
Methylene chloride	0.61	ug/L	T-J	1.0		SW8260B	09/10/02 14:19 / trr
Styrene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,1,1,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,1,2,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
T - The analyte was detected in the associated trip blank.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
J - Estimated value. The analyte was present but less thar the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena GW
Lab ID: H02090019-004
Client Sample ID: HL-0209-103

Report Date: 09/16/02
Collection Date: 09/04/02 11:00
Date Received: 09/04/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Tetrachloroethene	2.5	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Toluene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,1,1-Trichloroethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,1,2-Trichloroethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Trichloroethene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Trichlorofluoromethane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
1,2,3-Trichloropropane	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Vinyl acetate	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Vinyl chloride	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
m+p-Xylenes	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
o-Xylene	ND	ug/L		1.0		SW8260B	09/10/02 14:19 / trr
Surr: 1,2-Dichloroethane-d4	98.4	%REC			70-130	SW8260B	09/10/02 14:19 / trr
Surr: Dibromofluoromethane	98.8	%REC			77-126	SW8260B	09/10/02 14:19 / trr
Surr: p-Bromofluorobenzene	98.8	%REC			76-127	SW8260B	09/10/02 14:19 / trr
Surr: Toluene-d8	116	%REC			79-122	SW8260B	09/10/02 14:19 / trr

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM

Consulting Scientists, Engineers and Contractors

HF-FORM-430

Project Name: City of Helena
Project Code: 1273
Sample Team Member(s): W Crane
Laboratory Used: Energy

Site Designation: #52 Hartze
Sample Code Number: HL-0209-103
Sample Date: 9/4/02
Sample Time: 11:00 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
monitoring well (domestic well) adit seep
spring other:
Weather Conditions: calm (breeze) windy
(no precip.) rain snow
clear (p. cloudy) overcast
Air Temperature: 22 °C °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) / 25

Comments

TD(ft.) Pumping Rate gpm
SWL (ft): (no access/pumping)
Casing Diameter (I.D.") 6
Water Volume (V) (gal): V x 3 =(gal)
MP Description 15
Actual Vol. Removed (gal.) ran 15 minutes then sampled
Water Level Recovery: slow moderate (rapid)

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (clear) slight moderate (circle)

Sample Method: (grab) composite (pump) bailer other (describe) perm. installed

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH	7.29	
SC (µmhos/cm)	1240	
Turbidity (ntu)		
H_2O Tmp. (°C)	12.3	
Color	none	
Other; odor	none	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
2	40 ml	F or (UF)	HCL	VOC	
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: Walter Crane

Page of

Site	Code#	Date Time	SWL' TD'	Bottles/Pres/Analysis	pH/SC/Temp°C	Comments
1 Trip Blank	HL-0209 -100	9/4/02 09:00	— —	2/40/uF/HCL/ VOC	—/—/—	Energy Lab prepared trip blank, carried in cooler w/ samples from start to finish
HL-99-1	HL-0209 -101	9/4/02 09:50	no access 98'	2/40/uF/HCL/ VOC	7.29 / 1065 / 11.7	Pumping continously sampled from sample tap, 22 gpm flow
#48 Barbeau	HL-0209 -102	9/4/02 10:35	— —		7.74 / 1259 / 11.9	Barbeau Residence well been running all AM
#52 Hartze	HL-0209 -103	9/4/02 11:00	— —		7.29 / 1240 / 12.3	Hartze Residence ran 15 minutes then sampled
HL-99-2	HL-0209 -104	9/4/02 11:35	— 118'		7.38 / 813 / 12.1	running continously sampled from sample tap, 17 gpm
HL-99-3	HL-0209 -105	9/4/02 11:50	— 105'		7.31 / 879 / 11.8	running continously sampled from sample tap, 4k gpm flow meter not working
HL-90-1	HL-0209 -106	9/4/02 11:55	60' 60'	NO SAMPLE Water	—/—/— Crane	DRY, NO SAMPLE

9/4/02 Calibration

Beckman Model 10 pH meter SN 219059

Time	Standard	Temp	Instr. Reading
08:57	7	22.5°C	7.01
09:00	10	22.3°C	10.04

SC meter Hydac SN 9202

08:59	1413	72.4°F	1413

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DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

September 4, 2002

Ms. Pat Potts
Environmental Specialist
Department of Environmental Quality
Permitting and Compliance Division
Community Services Bureau
WMS/SWP
P.O. Box 200901
Helena, MT 59620

RE: LEWIS & CLARK COUNTY, CITY OF HELENA CLASS II (INACTIVE) LANDFILL – LICENSE NO. 90
GROUND WATER MONITORING – REVIEW OF THE JUNE 2002 SAMPLING EVENT.

Dear Ms. Potts:

I received a copy of your letter to John Rundquist of the City of Helena dated August 26, 2002 detailing your concerns about the June 2002 sampling event. Below are your comments followed by our response.

COMMENT:

RE-SAMPLE THE HARTZE #52 WELL

The concentration for methylene chloride (dichloromethane) detected in the Hartze well (#52) sample for the June 2002 sampling event exceeded the maximum contaminate level (MCL) of 5 µg/L. You are required to notify the owners of this exceedance [see ARM 17.50.710(4)(a)(iii)]. Concentrations of methylene chloride have only been detected in trace levels in the ground water previously considered to be impacted by the landfill.

Due to the relatively high concentration of methylene chloride in the Hartze #52 well, I strongly suggest this well be promptly re-sampled for VOCs. Low levels of methylene chloride can sometimes be attributed to other sources of contamination, such as the laboratory. Should methylene chloride be detected at or above the MCL/GWPS in the results of the re-sample, the City should consider sampling additional wells in this area. It is my understanding that most of the residents north of Custer Avenue are not on City water and use their private wells for drinking water. As I recall, methylene chloride may have been detected west of the Hartze well area, towards the Fairgrounds/County-State Surplus Shop area.

RESPONSE:

This detection is an isolated incident, both temporally for well #52 and spatially for the June 2002 sampling event. Well #52 (sampled semiannually) has not had a detectable concentration of methylene chloride for the last 10 years. In addition, well #48 (just to the east), well #62 (just to the west) and wells #18 and #40 (upgradient of #52) all had concentrations below the detection limit in the June 2002 sampling event. Any methylene chloride from the Fairgrounds/County-State Surplus Shop area would most likely have been detected in well #62 first, which has never had a detectable concentration of methylene chloride. A call to Energy Labs ruled out dilution factor error and matrix interference; however, the lab did mention that they have had a problem with methylene chloride contamination in bottles distributed from their Helena office. Well #52 will be re-sampled again as soon as possible to confirm or deny the presence of methylene chloride; however, the source, if any, is most likely not the landfill. A copy of the analytical data for the re-sample will be sent to MDEQ as soon as it is received from the lab. The owner of the well will be notified of the exceedance if the re-sample confirms the need.

COMMENT:

GENERAL DATA GAPS

We have observed the following data gaps in our review of the June 2002 sampling event:

- No trip blank was found for the second sampling event in a row. We have no idea where, or under what conditions these samples have been collected, shipped and stored prior to their receipt by the lab. Should there be any cross contamination between sample containers, a trip blank would be a reliable method of verifying such a situation. If you consider the distilled water sample satisfactory to serve as a trip blank, please remember to collect/prepare the sample container(s) before arriving at the site. A trip blank must accompany sample containers to the site, be handled like a sample, and returned with the samples to the laboratory for VOC analysis.

- We need page 2 of the analytical data for the Infiltration Gallery sample analysis.

- We also need page 3 of the lab analysis for the distilled water sample analysis.

- What is sample #114? We found no accompanying field notes for this analytical data.

RESPONSE:

Hydrometrics is in agreement with your comment on trip blanks. We will correct our field procedures accordingly. Page 2 of the analytical data for the Infiltration Gallery sample analysis and page 3 of the lab analysis for the distilled water sample analysis are attached.

As mentioned during the review of previous sampling events, duplicate samples are recorded on the same sampling form as the original sample. Sample #114 is a duplicate of well HL-90-3 and is included on sampling form for sample #111. A copy of the field notes that also contained reference to sample #114 was included in the data validation report you were sent.

COMMENT:

QUARTERLY SAMPLE FROM I-4

The concentration of tetrachloroethene was 10 µg/L in I-4 in the June 2002 sample. This irrigation well is located hydraulically downgradient from the ground water plume remediation system. We strongly encourage the City to include I-4 in the September 2002 quarterly sampling event. The quality of the ground water in this well at the end of the summer 2002 remediation activities should be beneficial in determining the effectiveness of the seasonal remediation system.

RESPONSE:

Irrigation well I-4 has been sampled on an annual basis for the last six years and has always measured 10 or 11 ug/L for PCE. Due to the distance between I-4 and the remediation system and the short time the remediation system has been in operation, we do not feel that sampling I-4 in the September 2002 quarterly sampling event will provide significant data. Well HL-90-1, immediately downgradient of the remediation system has been sampled quarterly during operation of the system and has been used to demonstrate its successful operation.

COMMENT:

REPAIR OR PLUG AND ABANDON MPC-5

MPC and/or their environmental representative company needs to be notified in writing about the damage that has been done to the well by the construction in the area. This well should be repaired or properly plugged and abandoned, as it may serve as a conduit for contaminants to enter the ground water.

RESPONSE:

Mike Larson, the consultant for MPC responsible for the MPC wells located adjacent to the landfill was notified previously by phone on three separate occasions of the problems with well MPC-5. He was called twice during the June sampling event, after which he informed us that their environmental representative in Helena had fixed the well. However, upon receiving this notice, we attempted to re-sample the well and failed to get sampling equipment down to the static water level. Mike was again notified of the problem, but we have yet to hear back from him.

If you have additional questions or concerns about the June 2002 sampling event, please don't hesitate to call.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

Attachments

c: Mike Wignot, Hydrometrics, Inc.
John Rundquist, City of Helena

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LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena Landfill
Lab ID: H02060039-024
Client Sample ID: HL-0206-125

Report Date: 07/11/02
Collection Date: 06/07/02 16:15
Date Received: 06/10/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichloroethene	ND	ug/L		1.0		SW8260B	06/19/02 23:01 / sbd
Trichlorofluoromethane	ND	ug/L		1.0		SW8260B	06/19/02 23:01 / sbd
1,2,3-Trichloropropane	ND	ug/L		1.0		SW8260B	06/19/02 23:01 / sbd
Vinyl acetate	ND	ug/L		1.0		SW8260B	06/19/02 23:01 / sbd
Vinyl chloride	ND	ug/L		1.0		SW8260B	06/19/02 23:01 / sbd
m+p-Xylenes	ND	ug/L		1.0		SW8260B	06/19/02 23:01 / sbd
o-Xylene	ND	ug/L		1.0		SW8260B	06/19/02 23:01 / sbd
Surr: 1,2-Dichloroethane-d4	105	%REC			72-116	SW8260B	06/19/02 23:01 / sbd
Surr: Dibromofluoromethane	108	%REC			74-121	SW8260B	06/19/02 23:01 / sbd
Surr: p-Bromofluorobenzene	104	%REC			87-124	SW8260B	06/19/02 23:01 / sbd
Surr: Toluene-d8	101	%REC			85-115	SW8260B	06/19/02 23:01 / sbd

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Hydrometrics Inc-Helena
Project: Proj. No. 1273, City of Helena Landfill
Lab ID: H02060039-012
Client Sample ID: HL-0206-112

Report Date: 07/11/02
Collection Date: 06/07/02 08:40
Date Received: 06/10/02
Matrix: AQUEOUS

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Tetrachloroethene	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
Toluene	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
1,1,1-Trichloroethane	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
1,1,2-Trichloroethane	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
Trichloroethene	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
Trichlorofluoromethane	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
1,2,3-Trichloropropane	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
Vinyl acetate	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
Vinyl chloride	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
m+p-Xylenes	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
o-Xylene	ND	ug/L		1.0		SW8260B	06/19/02 01:03 / sbd
Surr: 1,2-Dichloroethane-d4	103	%REC			72-116	SW8260B	06/19/02 01:03 / sbd
Surr: Dibromofluoromethane	108	%REC			74-121	SW8260B	06/19/02 01:03 / sbd
Surr: p-Bromofluorobenzene	103	%REC			87-124	SW8260B	06/19/02 01:03 / sbd
Surr: Toluene-d8	103	%REC			85-115	SW8260B	06/19/02 01:03 / sbd

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

CLOSED
CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

RESULTS OF JUNE 2002 GROUNDWATER SAMPLING

JULY 2002

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 4

RECEIVED 8/6/2002

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CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

RESULTS OF MARCH 2002 GROUNDWATER SAMPLING

JUNE 2002

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 4

RECEIVED 6/6/2002

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May 22, 2002

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COMMUNITY SERVICES BUREAU

Ms. Pat Potts
Montana Department of Environmental Quality
Permitting and Compliance Division
WMD / SWP
P.O. Box 200901
Helena, MT 59620

Dear Pat,

Enclosed for your review are the proposed monitoring sites and analytical schedule for the June 2002 semiannual groundwater monitoring at the Helena Landfill. There are no changes from the December 2001 sampling regime. Please call if you have any questions or comments.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

c: John Rundquist, City of Helena
Mike Wignot, Hydrometrics

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HELENA LANDFILL
JUNE 2002 SAMPLE SITE AND PARAMETER LIST

Site Name	Parameter
Monitoring Wells [1]	
83-6	Table 1
HL-94-1	Table 1
I-1	Table 1 VOC's only
HL-94-2	Table 1
HL-90-3	Table 1
HL-90-3 (duplicate)	Table 1
INF. GALLERY	Table 1 VOC's only
HL-94-3	Table 1
MPC-2	Table 1 VOC's only
HL-90-2	Table 1
HL-99-3	Table 1
EPA-1	Table 1
HL-99-2	Table 1
MPC-1	Table 1
MPC-5	Table 1
HL-99-1	Table 1
I-4	Table 1 VOC's only
HL-90-1	Table 1
Residential Wells:	
5	Table 1 VOC's only
18	Table 1 VOC's only
40	Table 1 VOC's only
48	Table 1 VOC's only
52	Table 1 VOC's only
57	Table 1 VOC's only
62	Table 1 VOC's only
90	Table 1 VOC's only
Quality Control:	
DI Blank	Table 1
Rinsate Blank	Table 1

(1) Monitoring wells are listed in the order to be sampled.

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COMMUNITY SERVICES BUREAU

March 7, 2002

Ms. Pat Potts
Montana Department of Environmental Quality
Permitting and Compliance Division
WMD / SWP
P.O. Box 200901
Helena, MT 59620

Dear Pat,

Enclosed for your review are the proposed monitoring sites and analytical schedule for the March 2002 quarterly groundwater monitoring at the Helena Landfill. Well 48 is being sampled as part of the City's Action Plan for tetrachloroethene (PCE) in downgradient domestic wells. Please call if you have any questions or comments.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

c: John Rundquist, City of Helena

HELENA LANDFILL
MARCH 2002 SAMPLE SITE AND PARAMETER LIST

Site Name	Parameter
Monitoring Wells [1]	
HL-99-3	Table 1 VOC's only
HL-99-2	Table 1 VOC's only
HL-99-1	Table 1 VOC's only
HL-90-1	Table 1 VOC's only
MPC-1	Table 1 VOC's only
48	Table 1 VOC's only

(1) Wells are listed in the order to be sampled.